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Coastal Zone Management
Virgin Islands

COMMERCIAL BOATING OPERATIONS AND FUEL
USE IN THE U.S. VIRGIN ISLANDS

A Study to Determine the Need For
Fuel Terminal Facilities And The
Economic Impact of the Overall
Boating Industry on The
Economy of The Islands

COASTAL ZONE
INFORMATION CENTER

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For The Federal Programs Office,
Office of the Governor, U.S. Virgin Islands

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PART I -- INTRODUCTION

Boating operations in the United States Virgin Islands is big business, consumes large amounts of fuel and makes a significant economic impact. The development of the charter boat, sport fishing and other types of recreational boating follows the escalation of the tourist industry after World War II but with greater intensity beginning in the mid-1960's. The full-time and part-time commercial fishing industry has always been a viable part of the Virgin Islands' heritage and food sources. Although the local catch of fish and lobster probably accounts for less than thirty percent¹ of the seafood consumed on the islands it has a greater significance because residents and tourists want fresh seafood.

It would be difficult to conduct an accurate census of all boats in the Virgin Islands due to the transient nature of the boating industry. The number of part-time and full-time fishermen can be estimated with greater accuracy than a census of the charter, sport fishing and recreational boat operators. Fishermen, various government agency representatives and other informed people estimate that there are approximately 600 part-time and full-time fishermen on the three islands with the number on St. Thomas and St. Croix about evenly divided with approximately 275 each and the remainder on St. John.

The growth of the entire boating industry and the demand for fuel correlates with the population growth. For example, in the early 1930's there were approximately 22,000 people residing on the three Islands. The boating industry at that time was principally for full-time and part-time commercial fishing. Thirty-three percent of the Islands' labor force was involved in agriculture and commercial fishing. Today it is less than one percent.²

The Bureau of Fish and Wildlife, Virgin Islands Department of Conservation and Cultural Affairs has the responsibility for boat registration. Their statistics show that there were 2765 boats of all types registered on the three islands as of December 31, 1979 and 2901 on December 31, 1982. Data for 1982 reveals that there were 2189 boats operating out of St. Thomas and St. John and 712 operating from St. Croix.³ All of the fuel and gasoline consumed by the boating industry and for the entire Virgin Islands economy is imported.

The Hess Oil Virgin Islands Corporation on St. Croix was created in 1969 and began operations soon afterwards. It is the world's third largest oil refinery. However, all the crude oil for refining is imported from foreign countries. After refining virtually all of the product is shipped to the U.S. mainland. Although some refined product is sold in the Virgin Islands. Thus virtually all of the fuel needs of the islands are imported from the U.S. mainland, Puerto Rico and elsewhere. A similar comparison can be made with food imports

that amounts to ninety eight percent of consumption. The Virgin Islands has an open economy in which there is a large inflow and outflow of goods, services and money. According to Mr. Edward Miller's report, The Economy of the Virgin Islands, it is a "small economy that consumes a large quantity of imported goods and pays for them through tourism, export earnings and transfers from the federal government."⁴

Charter boating, Sport and Commercial Fishing and numerous recreational uses of other types of boating attracts thousands of tourists each year. The increase of tourism creates a larger marketing demand for recreational boating and more consumption of fuel.

Those interviewed in the study were candid and responsive. This included both the fishermen and the members of the recreational boating community. For the most part the interviewer received a friendly and open reception. Rarely was there encountered any hostility from people interviewed. We identified ourselves as a contractor for the Virgin Islands Government, rather than a government employee. We gained their confidence in the first few minutes of the interview.

Both the fishing and the boating communities lead independent and unstructured lifestyles. Consequently they tend to resist surveys, regulations and restrictions. There appears to be a strong underlying mistrust and resentment toward the U.S. and V.I. Government and its bureaucracy in particular.

In the boating community we feel that the figures collected for revenues, number of charters and passengers-carried-per-year were understated. However, data on charter provisions and volume of fuel consumed during the course of a year appear to be very accurate.

When it came to estimating their fish catch, the fishermen interviewed had a tendency to skew the numbers. The full time serious fishermen who went out every day for their main livelihood leaned more on the conservative side in their estimations. The part-timers, on the other hand, tended to overstate their catch. Part of the reason for this variation might be attributable to the lack of adequate record keeping -- or their desire to share their records with the interviewer. Another possible explanation for this difference was the distrust felt by the fishermen in how the information might be used by a Virgin Islands or a federal agency. The hesitancy to be candid applied somewhat to the charter boat community as well.

The boating community enjoys a unique position in the V.I. The smaller, individual charter operators run their operations in St. Thomas out of either Red Hook, American Yacht harbor or the old Sheraton Hotel Marina. There are not many term (week) charters out of St. Croix. Individual charter operators live on board their boats and have adopted an independent, if economically marginal life style. The large fleet

operations are often managed by retired continentals that are experienced sailors.

Of the two types of charter operations, the large fleets account for more revenue generated per boat than the individually owned charters. The net effect, as the data indicate, is a large flow of dollars per year into the V.I. economy. This comes in the form of direct revenue paid by sailing guests, marine supplies, provisions for the charters and virtually all ancillary retail goods and services that derive from the boating industry. Despite this positive economic influence, both the large and individual charter operators almost universally voiced strong dissatisfaction with their relationship with the local government. In several cases boat owners or operators considered to being interviewed with the hope that their opinions on this subject were included in the study.

The members of the sailing community have a very low threshold for federal and Virgin Islands governmental restrictions. In the case of fishermen, there seemed to be an underlying resentment toward the governments. There appeared to be very little evidence of positive interaction between the boating community and the local inhabitants, or the local government.

Numerous charter operators felt that the treatment they received from the different regulatory agencies, and the government in general, made the U.S.V.I. a less attractive

place to base their operations. As an example, they cited the proposed mooring fees which are supposed to be charged to any boats anchored within a certain distance of a harbor. British Tortola in the B.V.I. was often mentioned as an attractive alternative to St. Thomas.

In conducting the field survey the issue of what is going to happen to the V.I. economy was mentioned frequently. Their concern is the lack of diversification in the industry of the Virgin Islands and its ability to absorb the currently unemployed, not to mention the flow of graduates coming out of the island school system. This becomes evident when examining the boating industry as a potential employment source. Relatively few native islanders are employed in the charter boat operations. Yet, as the data show, there is a lot of revenue injected into the local economy from that sector.

As the data indicate, there are relatively few fishermen in the U.S.V.I. This group regularly told how the catch was growing smaller with each passing year. Despite this claim, it was evident that as more people became underemployed or unemployed, they turned to fishing to supplement their income and food supply. The cost of fresh fish at the retail markets on the islands was high, even when buying fish at the docks. The only explanation is that the demand far exceeds the supply of available seafood. It therefore, seems that the fishing industry, such as it is, will not be a likely place to absorb those who cannot find work elsewhere.

The general belief in the decline of the fish catch is supported in interviews with the deep sea sport fishing operators. Over the past five years, there has been a general decline in the number of people coming from the U.S. mainland for sport fishing in the V.I. Part of this decline, they maintain, is attributable to the high operational costs which has forced them to raise their daily rates which in July 1982 were as high as \$475 per day. The other reason, in the words of one of the charter fishing captains, is the decline in fish caught.

The general well being of the boating community is directly related to the mainland economy. As that market gets tighter, there is a squeeze on the term-charter operations. Fishermen will continue to fish, regardless of the state of the local economy. However, with the apparent decline in yearly catch and the increase of competition among those going out to sea on a regular basis, this will mean more pressure on an already limited occupation.

The ethnic makeup of the Islands' population reflects a continuous change and has a major effect on the V.I. boating industry. Four studies conducted between 1970 and 1978 give estimates of the percent of the nativeborn population, West Indian, Puerto Rican, U.S. continentals and "others", that are primarily Europeans. A summary of the studies is shown in Table 1. Column 1 reflects the study findings of the United Nations Committee on Small Territories as documented in

A/AC.109/L.1234. Column 2 reflects data compiled by the U.S. V.I. Department of Education's Resource Guide to the Culture of the U.S. Virgin Islands, 1973-1974. The third column reflects data prepared by the U.S.V.I. planning office in 1977 and the fourth column represents the U.S.V.I.'s policy council's estimate of the ethnic distribution of the island population in 1978.

Table 1

Ethnic Make-up of the Population
of the U.S. Virgin Islands

Ethnic Group	1	2	3	4	Average
	-----percentages-----				
Native Born	40	26	47	42	39
West Indians	24	31	28	31	29
Puerto Ricans	15	12	06	08	10
Continental	12	08	13	16	12
Others	09	23	05	03	10

Source: Compiled in the study, Socio-Economic Survey of Recreational Boating and Fishing in the U.S. Virgin Islands. David A. Olsen and Associates, St. Thomas, U.S.V.I., May 1979.

The vast majority of crewed and bareboat charters in the U.S.V.I. are sail boats. However, of the total of all recreational boats that includes charters, sixty nine percent are power boats and thirty one percent are sail, based on a sample of 183 boats. Significantly, the sample showed that of those that responded to the sample 51.9 percent were U.S. mainland born, 12.8 percent were Virgin Islanders by birth, 12.5 percent Puerto Rican, and the remaining 22.8 percent were British Virgin Islanders, Eastern Caribbean and European. Conversely, a very small percentage of the full-time and

and part-time fishermen are U.S. Mainland born citizens. The native born, Puerto Rican, and Eastern Caribbean born make up the overwhelming majority of fishermen.⁵

PART II -- PURPOSE AND OBJECTIVE OF STUDY

The purpose of the study is to determine the requirements and possible need for a fuel terminal to service the boating industry in the Virgin Islands. The boating industry is an important segment of the local economy and encompasses a wide variety of activities all of which require fuel storage facilities. A part of the study is directed toward the needs assessment of the various boating sectors of the Islands' economy. The data contained in the study can be used to determine the optimum size of a fuel terminal and therefore, limit the potential environment impact of any fuel terminal project. This study, Phase I of a two-phase project, is directed toward the collection and analysis of data. Phase II, to be conducted at a future date will build on the results and conclusions reached in Phase I. Phase I is being conducted as a part of a comprehensive analysis of the boating industry in the Virgin Islands.

PART III -- FUNDING FOR THE STUDY

The funds to conduct the fuel terminal study have been provided to the Federal Programs Office, Office of the Governor by the Coastal Energy Impact Program, National Oceanic and Atmospheric Administration of the United States Department of Commerce.

PART IV -- METHODOLOGY USED IN THE STUDY

The field work for the study was conducted during the summer and fall of 1982. Survey forms were completed during personal interviews with owners or operators of boats. There were no mail or telephone surveys. The selected sample of boating operations was made on the basis of personally locating and interviewing as many boat owners or operators as possible. In many instances a number of visits were required before an interview could be conducted because of the uncertainty of departure and arrival times. Some boats leave the dock or anchorage area at different hours of the day while others may be at sea for a week or more at a time. One Hundred-Nineteen (119) survey questionnaires were completed that represent 294 boats. There were 111 individual boating operations and 8 fleet operations. The fleet operations represented 183 boats. The sample by boat activity is shown in Table 2.

TABLE 2

CHARACTERISTICS OF BOATS IN THE
SAMPLE BY BOAT ACTIVITY

BOAT ACTIVITY	NUMBER OF BOATS	AVERAGE	NUMBER OF CREW MEMBERS
		BOAT LENGTH FEET	
Sport fishing	12	42	10
Commercial fishermen	19	22	26
Part-time Fishermen	52	18	43
Individual charters	28	53	45
Fleet operations ¹			
Bare boats	157	26	32
Crewed boats	26	53	104
Total fleet	183	30	136
Total all activities	294	--	344
Average		30	

-- = Not applicable

¹Data based on 8 fleet operations.

The 294 boats represent a very significant part of the total boating industry. The charter boats in the fleet operations and sport fishing are larger in size and participate in viable economic charter businesses. Likewise, the 19 boats in the commercial fishing fleet sample are full time fishermen that make their living from fishing and harvest a substantial portion of the fish harvest. The part-time fishermen surveyed are those that fish most often and harvest significant quantities of fish.

The crew members for the fishermen, sport fishermen and individual charters are in addition to the owner-operator of the boats. The number of crew members for the fleet operations represent the total crew.

The interviewers - statisticians conducted the interviews by visiting the major marinas, public and private boat ramps. Many boat operators anchor off shore, and use marinas for ingress and egress. In those instances interviews were conducted on shore while the owners or operators were purchasing fuel or supplies or while their boats were being repaired. Seventy-eight of the survey questionnaires were for boats harbored on St. Thomas that were individually owned or operated and 41 on St. Croix. The eight fleet operations are harbored on St. Thomas. An insignificant number of boats are harbored on St. John. Most boats using St. John waters are harbored on St. Thomas, mostly on the east end of the Island. The vast majority of all boats using St. Croix waters

are harbored at Christiansted and Fredericksted. The number of boats included in the study harbored at specific deck locations by boat activity are shown in table 3. In view of the numerous boat locations on St. Thomas and the small size of the Islands it would be very difficult to analyze the data. Therefore, we have congregated the dock locations in table 4 to identify the locations as East End, Charlotte Amalie, and the Northside on St. Thomas. The four locations on St. Croix are identified as "St. Croix" in all tables except in table 3 where the number of boats on St. Croix are specifically identified by the dock location.

In addition to interviewing boat owners and operators, representatives of public and private organizations and numerous other interviews were conducted. Also representatives of various Virgin Islands agencies that have responsibilities related to the marina and boating industry were interviewed. They include the:

1. Virgin Islands Department of Conservation and Cultural Affairs
2. Virgin Islands Department of Commerce
3. Virgin Islands Energy Office
4. Virgin Islands Coastal Zone Management Commission
5. Virgin Islands Department of Public Works
6. Virgin Islands Port Authority
7. Governor's Office

Table 3

Specific Dock Locations of Boats in Sample by Boat Activity

Boat Location	Sport Fishing	Commercial Fisherman	Part-time Fishermen	Individual Charters	Fleet Charters		Total Number of Boats
					No. of Fleets	No. of Boats	
					---No. of boats or fleets - St. Thomas---		
Yacht Haven				23	1	36	59
Am. Yacht Haven				2			2
Red Hook	3			1	3	70	74
Lagoon					1	20	20
Antilles	1				1	6	7
Compass Pt.	1				1	26	27
Frenchtown		4	8		1	25	37
Hull Bay		2	5				7
Nadir			2				2
Coast Guard Dock			3				3
Sub Base			1				1
Pineapple Beach			5				5
Magens Bay			3				3
Coki Beach			2				2
Secret Harbor		1					1
Fish Hawk	2						2
Sapphire	1						1

---No. of boats or fleets - St. Croix---

Fredericksted	1	9					10
Gallows Bay	1	1					2
Grove Bay	1						1
Christiansted	4	9	13	2			28
Total	12	19	52	28	8 1/2	183	294

Note: Boats in the sample operating in St. John waters are based on St. Thomas, mostly the east end of the island.

1/ The eight fleets comprise the 183 boats shown in column 6.

Table 4

NUMBER OF BOATS HARBORED AT DIFFERENT DOCK LOCATIONS
BY BOAT ACTIVITY

Boat Activity	East End ^{1/}	Charlotte ^{2/} Amalie	Northside ^{3/}	St. Croix ^{4/}	Total
	<u>Boat Operations</u>				
Sport Fishing	9	0	0	3	12
Commercial Fishermen	1	4	2	13	20
Part-time Fishermen	8	13	8	23	52
Individual Charters	3	23	0	2	28
Fleet Operations ^{5/}	6	2	0	0	8
	<u>27</u>	<u>42</u>	<u>10</u>	<u>41</u>	<u>120</u>

^{1/} Dock locations in East End of St. Thomas include Fish Hawk Marina, P.D. Marina, American Yacht Harbor, Compass Point, Antilles Boat Yard, Sapphire Bay, Secret Harbor, Nadir, Pineapple Beach, Coki Beach, Red Hook, and Lagoon.

^{2/} Dock locations within Charlotte Amalie include Frenchtown, Long Bay, Coast Guard Dock, Yacht Haven and the Sub Base.

^{3/} Dock locations in Northside of St. Thomas include Hull Bay and Magens Bay.

^{4/} Dock locations within St. Croix include Christiansted and Frederiksted.

^{5/} Boat operations of fleet owners comprise 158 boats in the East End and 25 boats in Charlotte Amalie.

PART V -- THE CHARTER BOAT AND FISHING INDUSTRY
IN THE U.S. VIRGIN ISLANDS

The 1960's was a period of great expansion in the Virgin Islands. This growth in almost all economic and social areas resulted from several different causes: changes in laws governing the territory; the deterioration and elimination of U.S. trade and relations with Cuba; the dramatic expansion of tourism in the Islands; and, the migration of thousands to the Islands from other less developed Caribbean islands interested in participating in the increased opportunities created by the growing tourism trade. Population grew at a yearly average rate of 8.9% during the 1960's, to a total of 75,151 in 1970. Approximately 64% of the 41,726 person population increase was due to migration. By the 1970's, the percentage of non-native Islanders (63.5%) exceeded that of native born Islanders (36.5%). Population density thickened greatly in the 1960's as a result of this growth. As a whole, it increased from 243 people per square mile in 1960 to 569 people per square mile by the end of the decade. By the 1970's, St. Thomas had become the second most densely populated Caribbean island after Barbados, growing from 506 people per square mile in 1960 to 1,165 people per square mile in 1970. St. Croix also doubled its population density from 187 people per square mile in 1960 to 449 people per square mile in 1970.⁶ The boating industry grew at a rate comparable to the overall growth of the islands.

Crewed and Bareboat Charters

The charter sailboat industry in the U.S. Virgin Islands is divided between crewed boats and bareboats. Crewed charters are sailboats rented for usually a week at a time and manned by a skipper and often a mate who serves as a cook. Bareboat charters are rented without crews. Usually these are leased to groups of four to six experienced sailors who prefer to sail rather than have someone do the sailing for them. Bareboat charters are rented for a week at a time as well, and are referred to as "term Charters" to differentiate them from day charters.

Fees charged for bare and crewed charters vary within each group but usually rentals for crewed are higher than bareboat charters. In addition to the crews, these charters are usually provisioned by the owners renting the boat prior to a trip. Foodstores can range from simple fare, to luxurious, gourmet meals complete with vintage wines and Champagne. Of course, charter fees reflect these features.

Many of the crewed boats are privately owned, with the owners doing the sailing during the charter. They might be a husband and wife team seeking a way of life based on vocation or business reasons, a retired older couple who are experienced seamen, or just a young man and a companion who have chosen a more adventurous lifestyle.

Individually-owned charter boat owners are willing to work on a smaller profit margin and they may pay more attention

to the service they provide than the bookkeeping part of the business. There were exceptions to this, however.

Cruising areas on a term charter for both crewed and bareboat charters can extend from the area immediately in the vicinity of the three U.S. Virgin Islands to the British V.I. and farther down the Antilles, south of the V.I.

Fleet Operations and Charter Operations

Fleet operations are more adapted to bareboat charter operations although they do supply crews for a limited number of charters. The fleet operators (brokers) provide the management, advertising, maintenance and repairs and all the other necessary services associated with the charter industry. Fleet operations are managed a great extent by continentals with adequate capital for a successful business. Such companies are often formed under one business logo. However, the boats are individually owned and leased to the fleet operators.

Sport Fishing Charters

At the time of the survey, there were approximately 40 fully-equipped, sportfishing boats operating regularly in the U.S.V.I. Most of those operate from St. Thomas and out of the American Yacht Harbor at Red Hook.

According to many of the captains of these boats, there has been a general decline in the number of mainland deep sea fishermen coming to the V.I. This, they say, is attributable

in part to the increased costs in airfare to get to the V.I. and the general increase in daily fees charged for a charter, costing up to \$475 per day. Also, there is supposedly a decline in the number of trophy-sized fish that can be caught close in to the three-island area. To catch the same sized fish of ten years ago, the sportfishing boat must go out much farther into the ocean. Consequently, this increases the operating expenses and the daily charter fee. Like chartered sailing skippers, sport fishermen are engaged more in a life-style than a business.

Full Time Commercial Fishermen

Commercial fishing has historically been a viable part of the food supply and economic support of many families in the U.S. Virgin Islands. Estimates vary on the number of full time fishermen on the three islands, but it appears there are less than 200. In a study conducted by the United States Department of Agriculture in 1975 it was reported that the Virgin Islands Bureau of Labor Statistics listed 100 full time commercial fishermen on St. Croix. These numbers are substantially less than estimates made by other individuals and V.I. agencies. These estimates show that there may be as many as 1000 fishermen. There are approximately the same number on St. Thomas. Very few fishermen operate out of St. John. Of the estimated five million pounds of fish consumed locally about twenty-five to thirty percent is

harvested locally. The remainder is imported primarily from the U.S. mainland. Fishermen with small boats make one-day or one-night trips fishing on the "shelf" that is very narrow around the islands.

The water surrounding the islands is considered "sterile" by marine biologists, compared with the Gulf Stream off Florida, Georgia, South Carolina, and North Carolina Coasts. The relatively "sterile" quality of the water and the unusual depths require different fishing techniques than those used on the U.S. Continental shelf. On the other hand, the high quality of the fish and the types of fish caught bring exceptional prices to the fishermen in comparison with U.S. mainland prices. The fish are caught on power reels, in traps, and on lines. Some of the major types of fish caught are kingfish, dolphin, tuna, barracuda, snapper, grouper, jack, parrot fish, trigger and grunt.

Full time fishermen are able to fish only an average of three days per week throughout the year due to weather conditions, time required to sell the catch, and time required for maintenance and repairs to boats and equipment. Most boats are open and range in length from 14 feet to 25 feet. Most are less than 20 feet in length. When a catch is brought in, the fishermen immediately sets out to sell the fish, either at the dock, on the street corner, to restaurants, to hotels or to fish markets. Since fish is not iced, sales must take place immediately upon landing to prevent spoilage in the warm climate.

Part-time Fishermen

Part-time fishermen follow the same fishing schedules and use the same methods for fishing as the full-time fishermen. They usually fish on Saturdays and Sundays and at night to supplement relatively low wages from daytime jobs. Accurate statistics on the number of part-time fishermen are not available. Estimates vary between 500 and 1,000 on the three islands. A recent publication by the Virgin Islands planning office estimated that there are 700.

PART VI -- FUEL USE BY THE BOATING INDUSTRY
IN THE VIRGIN ISLANDS

The Virgin Islands is a good example of an area in which severe limitations of energy production, inefficient energy management and use, and inadequate potable water resources provide serious constraints on development. Possibilities for development are limited even further because these resource difficulties are associated with problems which include inadequate territorial planning capacities, an insufficient and deteriorating infrastructure, a less than generous degree of federal assistance, and an undiversified economy that is reliant upon tourism as its major private sector industry, an industry that offers low wages, low weekly hours, and low security employment. All of these problems are interrelated in fundamental ways. They make the Virgin Islands very vulnerable in the face of world resource problems created by fluctuations in resource price and availability. Given these

conditions, investment sources (private and public) are more likely to be driven away than attracted. Certainly the U.S. Virgin Islands cannot be considered to possess community entrepreneurship as defined by economist Albert Shapero.⁷ Total fuel and electricity consumption has shown a constant growth in the past ten years except for the slight decline in oil use in 1976, 1978 and 1980. See table 5.

Table 5
Fuel and Electricity Consumption in The
U.S. Virgin Islands, 1974-1981

<u>Year</u>	<u>Fuel Oil</u> ^{1/}	<u>Electricity</u> ^{2/}
1974	1,102	NA
1975	1,114	397.7
1976	1,076	397.7
1977	1,112	413.4
1978	1,095	426.0
1979	1,274	445.7
1980	1,273	448.7
July 1980-Feb. 1981	1,847	443.9

^{1/} In thousands of barrels

^{2/} in thousands of KWH

Source: Virgin Islands Growth Statistics, 1981,
Office of Policy, Planning and Research,
U.S.V.I. Department of Commerce and
Water & Power Plan, April, 1981, p. 12.

The cost of fuel is one of the major expenses of operating a boat. Fuel costs are more expensive in the Virgin Islands than on the United States mainland. Fuel costs at the time the field work for this study averaged \$1.60 per gallon for gasoline and \$1.67 per gallon for diesel. These costs are between thirty-five and fifty percent higher than mainland prices.

Fuel is distributed through marinas and local gasoline stations. Sport fishing, bareboats and crewed charter boats purchase fuel at the marinas where they dock. In a few instances, the larger charter may have fuel delivered by a local distributor to dockside. For the full-time and part-time fishermen fuel purchase and delivery is made in many ways. Fuel may be purchased at boat ramps, marinas or at stations in their neighborhood and hauled by car or pickup truck to the boat location. Some fishermen haul their boats by trailer and store them at home after each fishing trip. This gives the fishermen the flexibility of purchasing at the marina, boat ramps in the local neighborhood or at locations between the fishermen's residence and the location where the boat is launched. Although there are numerous gasoline service stations located throughout the islands catering to the motoring public, there are relatively few marine stations to serve the boating industry. The locations on St. Thomas are the Shoreline marina, Leeward Island Transport, Yacht Haven Marina, Vi pleasure Boats Marina, Vida Marina and the American Yacht Charter Marina. There is one marine station on St. John at Caneel Bay (National Park Service) and one on St. Croix at the St. Croix Marina. The specific locations of marina fuel stations are identified below and shown on the maps of St. Thomas, St. Croix and St. John, pages 29, 30 and 31.

Diesel fuel is the major fuel used by the charter industry and gasoline by the fishing industry. The bareboat and

crewed charters use fuel as supplemental to sailing. Nearly all of the charters are sail boats.

Figure 1, Fuel Dispensing Stations, USVI

St. Thomas

1. Shoreline Marina
2. Leeward Island Transport
3. Yacht Haven Marina
4. Vi pleasure Boats
5. Vida Marina
6. American Yacht Charters

St. Croix

St. Croix Marina

St. John

Caneel Bay

Source: Virgin Islands Department of
Conservation and Cultural
Affairs, 1983.

Overall, boats use about two times as much diesel as gasoline. The exception is true with the commercial fishermen and the part-time fishermen. The boats used by commercial and part-time fishermen are small, open boats and generally powered by outboard motors. On the other hand, sport fishing boats are heavy consumers of fuel. For example, the 12 sport fishing boats in the sample consumed approximately as much fuel as the 183 boats in the charter fleet operations. The sport fishing boats are under power during most of the time they are at sea while the charter boats are under sail except for leaving and entering harbors and during poor wind conditions. All of the 52 boats in the part-time fishermen sample used gasoline. Of

the 377,345 gallons of fuel consumed by the 294 boats in the total sample, sixty percent was diesel and forty percent gasoline. On the other hand, research conducted by Dr. David Olsen and associates in 1979 on all types of recreational boating shows that approximately two thirds of the boats use gasoline and one third diesel.⁸ Charter boats are larger and make efficient use of diesel.

The cost of diesel and gasoline per gallon is essentially the same. The average price of diesel was \$1.67 per gallon and regular leaded gasoline is \$1.60. The annual use and cost of fuel by boat activity and location is shown in Tables 6, 7, 8 and 9.

Fuel service stations are congregated at marinas where boats are docked or anchored. Service stations selling gasoline and diesel to automobile and truck customers are congregated along the principal roads. The accompanying maps of the three islands show the locations of marine and non-marine fuel service stations.

PART VII - OPERATING CHARACTERISTICS OF THE BOATS IN THE STUDY SAMPLE BY TYPE OF ACTIVITY

Individual Charter Boats

Table 10 shows the operating characteristics of individual charter boats.

Individual charter boats are crewed and most often by the owner or owners of the boat and one or more crew members. The charters are term in nature and the cruises generally last for

Table 6

Annual Fuel Consumption, By Boat Activity

Boat Activity	Annual Charters or trips	Gasoline Usage	Diesel Fuel Usage	Total Fuel Usage
	<u>Number</u>		<u>Gallons</u>	
Sporting Fishing	1,532	6,240	101,970	108,210
Commercial Fishermen	3,536	40,264	18,000	58,264
Part-time Fishermen	5,124	50,045	-0-	50,045
Individual Charter Boats	1,126	5,517	43,506	49,023
Fleet Operations	4,444	21,092	90,711	111,803
	<hr/>	<hr/>	<hr/>	<hr/>
Total	15,762	123,158	254,187	377,345

Table 7

GALLONS OF DIESEL FUEL USED BY DOCK LOCATION
AND BOAT ACTIVITY (ANNUALLY)

BOAT ACTIVITY	CHARLOTTE			NORTHSIDE	ST. CROIX	TOTAL
	EAST END	AMALIE				
Sport Fishing	88,992	13,728	0	0	0	102,720
Individual Charter	2,400	35,400	0	0	5,928	43,728
Fleet Charters	62,016	29,400	0	0	0	91,416
Commercial Fishing	4,590	9,128	0	0	4,499	18,217
Part-time Fishing	0	0	0	0	0	0
TOTAL	157,998	87,656	0	0	10,427	256,081 ^{1/}

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^{1/} Does not total to 254,187 shown in Table 6 due to fractional gallon usage per trip and rounding.

Table 8

GALLONS OF GASOLINE FUEL USED BY DOCK
LOCATION AND BOAT ACTIVITY (ANNUALLY)

BOAT ACTIVITY	CHARLOTTE				ST. CROIX	TOTAL
	EAST END	AMALIE	NORTHSIDE			
Sport Fishing	6,180	0	0	0	0	6,180
Individual Charter	600	4,800	0	0	0	5,400
Fleet Charters	16,320	3,528	0	0	0	19,848
Commercial Fishing	0	2,034	5,447	32,716		40,197
Part-time Fishing	6,432	11,880	6,815	26,268		51,395
TOTAL	29,532	22,242	12,262	58,984		123,020 ^{1/}

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^{1/} Does not total to 123,158 shown in Table 6 due to fractional gallon usage per trip and rounding.

Table 9

ANNUAL FUEL COSTS, BY BOAT ACTIVITY

BOAT ACTIVITY	GASOLINE COSTS ^{1/}	DIESEL FUEL COSTS ^{2/}	TOTAL FUEL COSTS
	<u>DOLLARS</u>		
Sport Fishing	9,984	170,290	180,274
Commercial Fishermen	64,422	30,060	94,482
Part-time Fishermen	80,072	0	80,072
Individual Charters	8,827	72,655	81,482
Fleet Operations	33,747	151,487	185,234
	<hr/>	<hr/>	<hr/>
TOTAL	197,052	424,492	621,544

^{1/}Based on \$1.60 per gallon average.

^{2/}Based on \$1.67 per gallon average.

FIGURE 2 -ST. THOMAS SURVEY AREAS

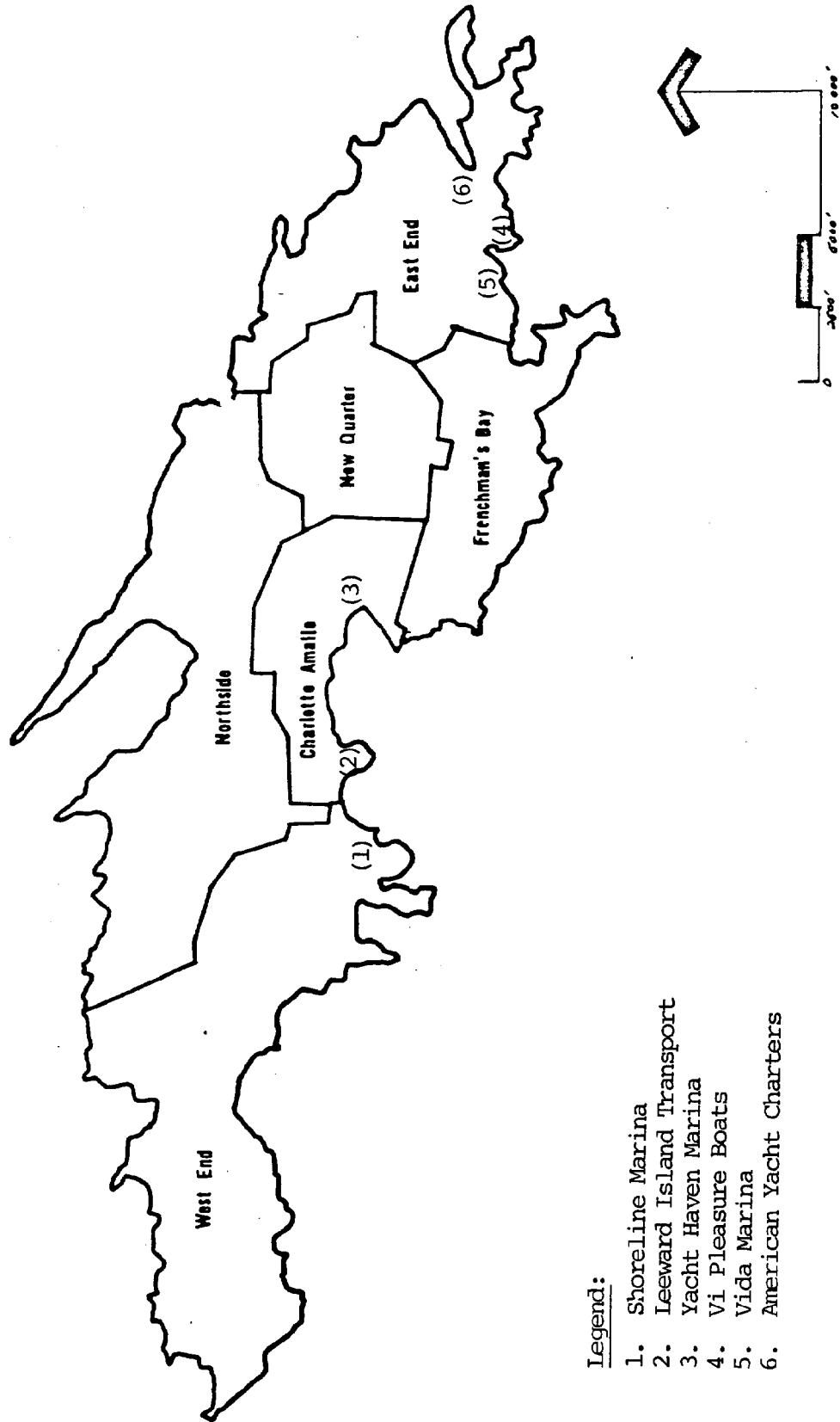
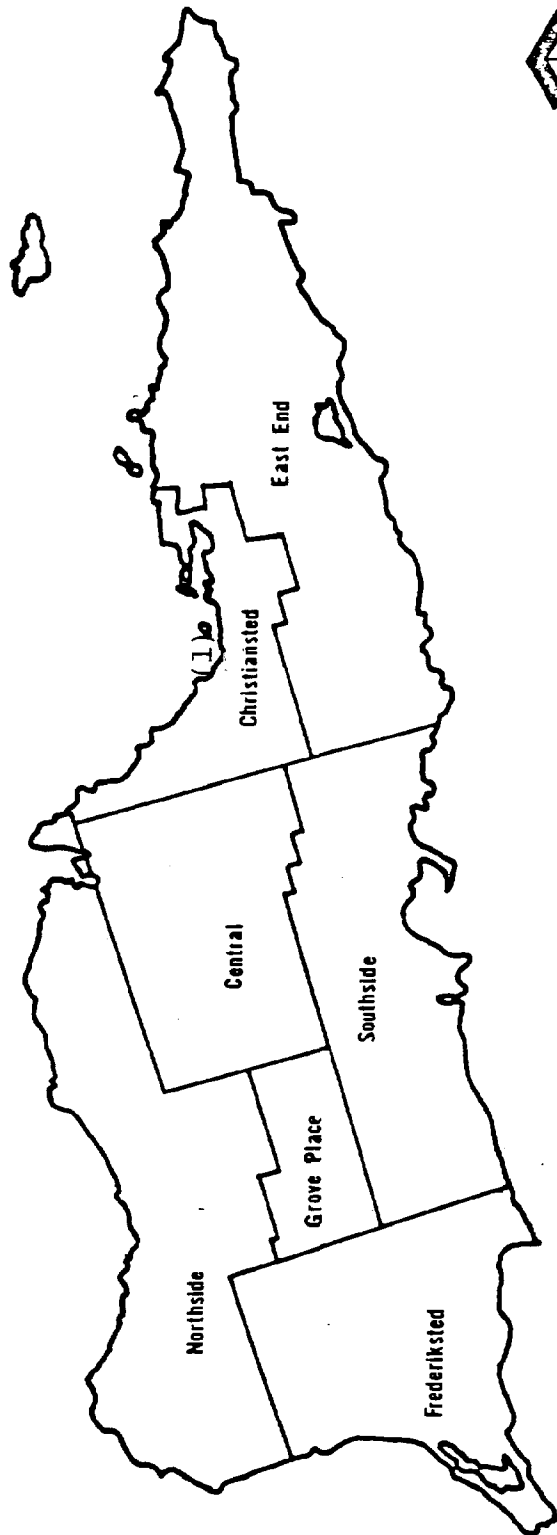
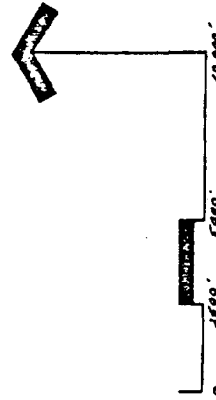


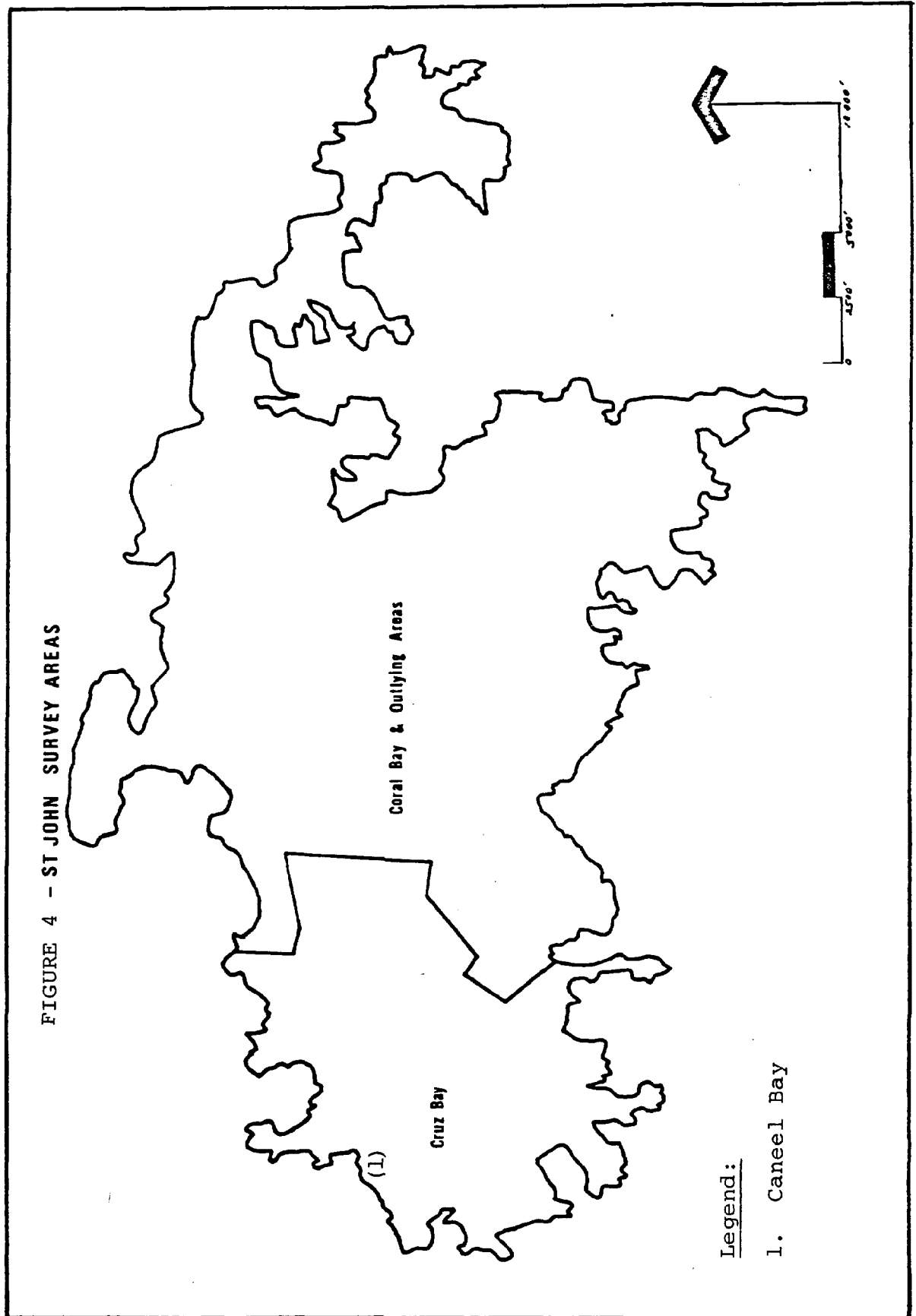
FIGURE 3 - ST. CROIX SURVEY AREAS



Legend:

1. St. Croix Marina





about a week except for St. Croix where most charters are day charters. The 28 individual charter boats in the sample made an average of 94 trips per month. The fifty charters per month out of Charlotte Amalie reflects the heavy concentration of tourists in the immediate area of hotels and shops. The greater use of diesel fuel for boats operating out of Charlotte Amalie is necessitated by the distance from the harbor to the open seas. Also, the extra costs for labor, supplies, maintenance, and provisions reflect the larger size of the boats operating from Charlotte Amalie. Conversely, the shorter trips of the boats operating out of St. Croix require less costs in all major categories than Charlotte Amalie boats but similar to those operating from the East End of St. Thomas. Note that the boats operating from St. Croix are not provisioned.

Fleet Charter Boats

Fleet operations cater to bareboat charters. Of the 183 boats in the sample, 157 were operated as bareboats and 26 were crewed. The bareboats are smaller, averaging 25 feet in length while the larger crewed boats averaged 53 feet. The number of guests, however, were the same for each type of charter. The average labor cost of \$389 per crewed charter adds substantially to the total cost of operations. Boats in the sample operated an average of 370 charters per month for a yearly total of 4440.

Table 10

OPERATING CHARACTERISTICS OF INDIVIDUAL CHARTER BOATS

OPERATING CHARACTERISTICS	EAST END	CHARLOTTE AMALIE	ST. CROIX	TOTAL OR AVERAGE
Total charters per month	25	50	19	94
Average number of guests per charter	7	9	13	9
Average gallons of diesel used per charter	8	59	26	39
Average gallons of gasoline used per charter	2	8	9	5
Average labor costs per charter (dollars)	64	567	107	340
Average costs of supplies provisions per charter (dollars)	114	454	0	272
Average costs of main- tenance and repairs per charter (dollars)	82	630	82	374
Average cost of insurance and fees per charter	36	132	46	89

The numbers therefore, translate into approximately 16 weeks of operation per year for each boat with most of the activity occurring in the winter months. The number of charters per year for each crewed and for each bareboat were about the same. The average number of weeks charters operate per year and the number of guests per charter in the study coincides with the estimates made in a report made to the Virgin Islands Department of Commerce by Mr. Clyde Carder in July 1980.

In that report Mr. Carder indicated that crewed charters operated 17 weeks per year and bareboat operations ranged between 15 and 32 weeks per year. It was not stated in the report, but presumably few boats operated for as much as 32 weeks. Fleet charters operate to a large degree out of the Eastern part of St. Thomas where three-fourths of the charters originate and the remaining one-fourth originate from Charlotte Amalie, the central area of the island. We did not include any of the relatively few fleet charters operating out of St. Croix and St. John. Detailed characteristics of fleet charter operations are shown in Table 11.

Sport Fishing Operations

Sport fishing operations included in the study operated from the east end of St. Thomas and mainly from Christiansted on St. Croix. Data was collected from 9 boats on St. Thomas and 3 on St. Croix. The 12 boats averaged 129 charters per month, 1532 for the year. Fuel usage is greater per charter for boats operating out of the East end of St. Thomas due to the distance to the deep water and the fishing areas. Except

Table 11

CHARACTERISTICS OF FLEET CHARTER OPERATIONS

ITEM	EAST END	CHARLOTTE AMALIE	TOTAL OR AVERAGE
Total charters per month	272	98	370
Number of bareboat charters per month	228	91	319
Number of crewed charters per month	44	7	51
Average number of guests per charter	5	5	5
Average number of guests per crewed charter	5	4	5
Average number of guests per bareboat charter	5	5	5
Average gallons of diesel used per charter	19	25	20
Average gallons of gas used per charter	5	3	5
Average labor costs per crewed charter	379	424	389
Average provision costs per charter	462	275	412
Average maintenance costs per charter	59	465	166
Average insurance costs per charter	19	94	38

for insurance and labor, all costs are more for the St. Thomas operations. The operating characteristics of sport fishing boats are given in Table 12.

Commercial and Part-time Fishing Operations

Fishing has always been an important way of life in the Virgin Islands for fishermen. Due to the size of the boats fishermen make short trips. Weather has a major effect on fishing due to the trade winds that increase velocity by mid-afternoon on most days. Fish are harvested throughout the year with the volume well distributed month by month. A fisherman makes approximately 3.5 trips per week that takes about six hours. The typical catch is 114 pounds per trip for commercial fishermen and 66 pounds per part-time fisherman.

The volume of fish caught is limited in volume but of excellent quality. Fish is sold immediately upon return to shore. Sales are made at the dock, on the street, wholesale or at restaurants. More than 20 types of fish are caught but the most important in the order of volume are grouper, olive wife, hind, and yellow tail.

Most fish are caught in traps that are set with bait on the bottom of the ocean. Some fishermen use nets to harvest fish that migrate to the off-shore waters during certain times of the year. A limited volume of spiny lobster is harvested.

Table 12

OPERATING CHARACTERISTICS OF SPORT FISHING BOATS

OPERATING CHARACTERISTICS	EAST END	ST. CROIX	TOTAL OR AVERAGE
Total Charters per month	103	26	129
Average charge per charter (dollars)	442	323	418
Total monthly revenue	45,519	8,398	53,917
Average gallons of diesel used per charter	72	44	67
Average gallons of gas used per charter	5	0	4
Average cost of supplies and provisions per charter (dollars)	75	31	66
Average cost of maintenance and repairs per charter (dollars)	29	6	25
Average cost of insurance and fees per charter (dollars)	18	38	22
Average cost of labor per charter (dollars)	46	91	56

The boat crews average two people. Tables 13, 14, 15, and 16 outline the operating characteristics, methods of fishing, marketing methods, types of engines and the experience of fishermen in the U.S. Virgin Islands.

PART VIII -- ECONOMIC IMPACT OF THE BOATING INDUSTRY
ON THE VIRGIN ISLANDS ECONOMY

The 233 boats in the sample, excluding the commercial and part-time fishermen, provided recreational services to 33,131 guests for the immediate twelve months prior to the date the survey was made. These guests injected \$14,397,501 into the economy, an average of \$432 per guest. The 72 commercial and part-time fishermen harvested 752,028 pounds of fish at a value of \$1,880,070. These two sources of revenue totaled \$16,277,571, a major input into a small island economy.

Tables 17, 18, 19 and 20 show boat size, number of trips, guests, the sources of income, fish harvest and expenses by boat activity and dock location. The sample, no doubt, shows a reasonable distribution of income taken by the boating industry at various locations and specific boat activity when compared to the total universe of boats on the three islands. The 344 crew members earned \$2,699,750 for an average of \$7,848 per crew member. It is significant that the majority of the income, except for the fishermen, is earned in a short period of about 15 to 20 weeks each year. It cannot be determined what part of the total labor income is spent in the islands. It is known, however, that all other operating costs totalling \$4,628,132, was spent locally.

Table 13

OPERATING CHARACTERISTICS OF COMMERCIAL FISHING BOATS

OPERATING CHARACTERISTICS	EAST END	CHARLOTTE AMALIE	NORTHSIDE	ST. CROIX	TOTAL OR AVERAGE
Total trips per month	17	61	35	182	295
Average pounds of fish caught per trip	125	219	167	95	114
Average gallons of diesel used per trip	22.5	12.47	0	2.06	5.09
Average gallons of gas used per charter trip	0	2.78	12.97	14.98	11.39
Average cost of supplies and provisions per trip (dollars)	6	41	16	15	20
Average cost of main- tenance and repairs per trip (dollars)	7.81	9.28	3.54	8.15	7.81
Average cost of insurance and fees per trip (dollars)	0	2.31	0	0	0.48
Average cost of labor per trip (dollars)	108	120	105	81	93

Table 14
OPERATING CHARACTERISTICS OF PART-TIME FISHING BOATS

OPERATING CHARACTERISTICS	EAST END	CHARLOTTE AMALIE	NORTHSIDE	ST. CROIX	TOTAL OR AVERAGE
Total charter trips per month	67	90	71	199	427
Average pounds of fish caught per trip	45	58	95	67	66
Average gallons of gasoline used per trip	8	11	8	11	10
Average cost of supplies and provisions per trip (dollars)	12	31	15	34	22
Average cost of maintenance and repairs per trip (dollars)	4	10	4	24	11
Average cost of labor per trip (dollars)	28	85	13	19	34

Table 15

METHODS OF FISHING, COMMERCIAL AND PART-TIME FISHING BOATS

DOCK LOCATION	LINE		NET		TRAP		FISHING	
	Commercial	Part-Time	Commercial	Part-Time	Commercial	Part-Time	Commercial	Part-Time
	Fisherman	Fisherman	Fisherman	Fisherman	Fisherman	Fisherman	Fisherman	Fisherman
	<u>Percent</u>							
East End	50	37	0	19	25	44	25	0
Charlotte Amalie	22	8	5	0	50	92	23	0
Northside	0	22	78	22	12	39	10	17
St. Croix	53	61	0	0	42	28	5	11
	—	—	—	—	—	—	—	—
Average	31	32	21	10	32	51	15	7

Table 16

METHODS OF MARKETING, TYPES AND SIZES OF ENGINES
AND YEARS OF EXPERIENCE, COMMERCIAL FISHERMEN

Dock Location	Method of Marketing			Engine Type		Average Horsepower	Years Experience	
	Dockside	Street	Wholesale	Restaurants				
				Outboard	Inboard			
				Percent				
East End	0	50	0	50	0	100	145	15
Charlotte Amalie	33	33	0	33	50	50	112	11
Northside	0	100	0	0	100	0	22	9
St. Croix	0	92	8	0	77	23	104	12
Average	8	69	2	21	55	43	96	12

Table 17

BOAT SIZE, NUMBER OF CHARTERS AND FISHING TRIPS, NUMBER OF GUESTS,
OPERATING COSTS AND FISH HARVEST BY DOCK LOCATION
(ANNUAL BASIS)

Dock Location	Boat Length	Annual Charters	Total Guests	Gasoline Usage	Diesel Fuel Usage	Total Labor		Total Provision Costs	Total Maintenance Costs	Total Insurance Costs	Total Fish Catch	
						Gallons	Dollars				Pounds	Dollars
East End	30	5,802	18,420	29,598	156,704	186,302	1,502,046	1,631,927	257,829	95,064	60,524	
Charlotte Amalie	40	3,582	11,280	22,283	73,328	95,611	837,464	651,292	919,561	188,872	207,948	
Northside	16	1,272	0	12,293	0	12,293	65,176	18,500	4,895	0	141,080	
St. Croix	22	5,106	3,431	58,984	24,155	83,139	295,064	120,624	95,680	22,344	342,476	
Total	--	15,762	33,131	123,158	254,187	377,345	2,699,750	2,422,343	1,277,965	306,280	752,028	
Average	30	--	--	--	--	--	--	--	--	--	--	--

-- = Not applicable

Table 18 reflects data on a per boat basis for all operations except the 8 fleets. The eight fleets are comprised of 183 boats and therefore, the data should be analyzed as if there were 183 boating operations. The 8 fleet operations consist of 26 crewed boats and 157 bareboats. The two types of operations are averaged together. The guest charges of \$1,474,866 (gross revenue) provides an annual revenue of \$80,594 per boat. Total annual operating costs for the 183 boats average \$31,784, leaving \$48,810 from which the fleet operator subtracts management fees and any other costs incurred.

The gross revenues per boat for the sport fishing and individual charters are substantially less than the fleet operations. The fleet operations no doubt can advertise more widely because of the collective resources of the average fleet size of 23 boats versus just one boat. Also, the operators operate strictly as a sophisticated business operation striving to obtain the maximum return to their clients.

The fish marketings (gross revenue) and operating costs for commercial and part-time fishermen are income and expenses that must be assigned to the boat as an operation. The net revenue must be shared by the operator and the boat crew based on some pre-arranged agreement. The average crew size including the boat owner for the commercial fishermen was 2.3 whereas, the part-time fishermen operate with an average crew of 1.8. Therefore, when the \$24,076 average net revenue per commercial fishing boat is shared by 2.3 crewmen the result is

Table 18

AVERAGE REVENUES AND COSTS PER BOAT AND FLEET
OPERATION, BY BOAT ACTIVITY
(ANNUAL)

BOAT ACTIVITY	Average Guest Charges	Average Fish Marketings	Average Labor Costs	Average Provision Costs	Average Maintenance Costs	Average Insurance Costs	Average Fuel Costs	Average Total Operating Costs	Average Net Revenue
	----- Dollars -----								
Sport Fishing	53926	--	7100	8456	3142	2830	15023	36551	17375
Commercial Fishermen	--	50302	16520	3515	1381	85	4724	26226	24076
Part-time Fishermen	--	16808	3308	2139	1065	0	1540	8052	8756
Individual Charters	69695	--	13693	10946	15046	3579	2910	46175	23521
Fleet Operations ^{1/}	1474866	--	216094	229103	91994	21300	23154	581646	893220

-- = Not applicable

^{1/} Eight fleet operations that comprise 183 boats.

a low yearly income. The income for the part-time fishermen is substantially less than the commercial fishermen.

Charter operations use all dock locations except the Northside of St. Thomas where only fishing operations are conducted accounting for zero guest charges in table 18. There are no dock facilities on the Northside from which charter operations could operate. On the other hand, fishermen operate out of all dock locations. Table 17 reflects the popularity of the use of the East End of St. Thomas for all charters. The East End accounts for approximately 55 percent of all of the guests using charters in the sample. Altogether, 170 boats in the sample operate out of the East End. One hundred-fifty-eight of the East End boats comprise six fleet operations. Labor costs for crew members on boats harbored on the East End accounts for 55 percent of all labor costs of boats in the sample and 67 percent of the cost of provisions. The high rate of expenditure for provisions reflect the large number of boats harbored and the length of time the charters are at sea where nearly all of the charters are term charters (weekly).

Table 19 summarizes operating costs by boat activity. The 183 boats in the fleet operations represent 62 percent of the 294 boats in the sample. The eight fleets employ 64 percent of the labor, and purchase 75 percent of the supplies and provisions. Their share of costs related to maintenance and repairs, 58 percent, insurance, 56 percent and fuel, 30

percent, is less than their proportionate share in comparison to other boating activities. Fuel use is particularly low because most of the energy required is provided by sail. Total operating costs for fleets amounted to 64 percent for all boating activities.

The twelve sport fishing boats in the sample were heavy users of diesel fuel in comparison to gasoline. Of the total fuel cost, \$180,274, more than 94 percent was for diesel. In contrast less than 20 percent of the fuel consumed by commercial and part-time fishermen was diesel. All types of boating activity are under insured. For example, not any of the 52 part-time fishermen indicated that they carried insurance. The commercial fishermen as a group (19 boats) paid only \$1700 per year in insurance premiums and fees. A substantial percentage of the individual charter operations did not carry insurance. The average annual premium of \$3579 per boat is skewed by large premiums on a relatively few boats. The \$170,400 annual insurance premium and fees paid by the owners of the 183 boats in the eight fleets reflect an annual premium of \$937. This figure does not include any insurance that might have been paid by the fleet broker-operators. Sport fishing boats paid an average of \$2930 in annual insurance premiums and fees.

The boating industry is a major asset to the U.S. Virgin Islands. The gross revenue from the 294 boats in the sample of \$16,277,571 makes an undeniable impact on the local economy,

Table 19

TOTAL ANNUAL OPERATING COSTS, BY BOAT ACTIVITY

BOAT ACTIVITY	LABOR	SUPPLIES AND PROVISIONS	MAINTENANCE AND REPAIRS	INSURANCE AND FEES	FUEL	TOTAL OPERATING COSTS ^{1/}
						DOLLARS
Sport Fishing	85,200	101,478	37,700	33,956	180,274	438,608
Commercial Fishermen	330,400	70,310	27,628	1,700	94,482	524,520
Part-time Fishermen	172,000	111,242	55,385	0	80,072	418,699
Individual Charter Boats	383,400	306,485	421,299	100,224	81,482	1,292,890
Fleet Operations	1,728,750	1,832,828	735,953	170,400	185,234	4,653,165
Total	2,699,750	2,422,343	1,277,965	306,280	621,544	7,327,882

^{1/} Excludes interest expense and depreciation.

an annual gross revenue of \$55,178 per boat and an average net revenue of \$30,338 per boat. Gross and net revenue, by boat activity is shown in Table 20.

The commercial and part-time fishing operations included in the sample, although very important supplier of seafood to island residents, earn only 11.6 percent of the gross revenues of the boating industry and 10.5 percent of the net revenue. As stated earlier, fishing boats are small open boats that are far less expensive to purchase and to operate in comparison to the sport fishing, individual charter and fleet charter operations. The individual charters have the largest percentage spread between gross and net revenues. For example, their gross revenues as a group consists of 13.6 percent of the gross revenues of the 294 boats in the sample but they realize only 7.4 percent of the net revenues. In comparison the fleet operations, that make up 62 percent of the number of boats in the sample earned 82.0 percent of the gross revenues and 79.8 percent of the net revenues. One advantage of the fleet operations over the individual charters can be attributed to labor costs. The individual charters are all crewed boats whereas the fleet charters are predominantly bare charters (without crew).

Sport fishing operation received 4.4 percent share of gross revenues and 2.3 percent of net revenues. Again, labor costs are a factor because most boats have a crew member. In addition, sport charters are heavy consumers of diesel fuel because of the types of boats and the nature of sport fishing.

Table 20

GROSS AND NET REVENUE, BY BOAT ACTIVITY

Boat Activity	Source of Gross Revenue				Dollars				Total		Net	
	Guest Charges	Percent of Gross Revenue	Fish Marketings	Percent of Gross Revenue	Gross Revenue	Percent	Gross Revenue	Percent	Operating Costs	Percent	Revenue	Percent
Sport Fishing	647,107	4.4	--	--	647,107	4.0	647,107	4.0	438,608	6.0	208,499	2.3
Commercial Fishing	--	--	1,006,050	54.0	1,006,050	6.2	1,006,050	6.2	524,520	7.2	481,530	5.4
Part-time Fishermen	--	--	874,020	46.0	874,020	5.4	874,020	5.4	418,699	5.7	455,321	5.1
Individual Charter Boats	1,951,467	13.6	--	--	1,951,467	12.0	1,951,467	12.0	1,292,890	17.6	658,577	7.4
Fleet Operations	11,798,927	82.0	--	--	11,798,927	72.4	11,798,927	72.4	4,653,165	63.5	7,145,762	79.8
Total	14,397,501	100.0	1,880,070	100.0	16,277,571	100.0	16,277,571	100.0	7,327,882	100.0	8,949,689	100.0

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--- - Not applicable

Sailors and fishermen visiting the U.S. Virgin Islands usually spend two or three nights ashore at hotels before departing and after their return from charters. They also purchase gifts and eat a number of meals at local restaurants and hotels. We have not included such expenditures in the calculations of the total economic impact of the boating industry to the islands, estimated to be several million dollars each year. Nor have we included expenditures for medical and other professional services that visitors use.

PART IX -- VIRGIN ISLANDS CHARTER YACHT LEAGUE

The Virgin Islands Charter Yacht League is an organization that represent the interests of the Charter Yacht owners conducting business in the Virgin Islands. It is a viable organization and has a membership of approximately 250.

The Charter Yacht League gave us their estimates of the number of members, number of guests per charter, number of weeks per year boats are chartered and the overall economic impact of their membership on the economy of the Virgin Islands. The estimates are shown in Table 21.

Data in table 21 is shown so that the Charter Yacht League estimates can be compared where applicable with the actual survey data obtained in this study. For example table 19 shows an annual operating cost of \$7,327,882 for 294 boats in the sample used in this study compared to \$11,830,400 for 425 boats in the Charter Yacht League estimates.

Table 21

USVI CHARTER BOAT LEAGUE ESTIMATES OF NUMBER
OF CHARTERS, GUESTS AND EXPENDITURES PER YEAR

1. Number of Crewed Charter	250	
Number Charters per year per boat	20	
Number guests per charter	5	
Total guests yearly	25,000	
Average expenditure per guest for food and drinks	<u>\$100</u>	
Total expenditures per year		\$2,500,000
2. Number of bareboat charter members	175	
Number of charters per boat per year	15	
Average number of guests per charter	4.8	
Total guests yearly	12,600	
Average expenditure per guest for food and drinks	<u>\$100</u>	
Total expenditures per year		\$1,260,000
3. Taxi Fares (37,600 passengers x 4 trips x \$4.00)		\$ 601,600
4. Lodging costs		\$ 564,000
5. Cost of meals on shore (37,800 passengers x \$12.00)		\$1,804,800
6. Marine support costs @ 12,000 per year per boat (includes haul-ups, marine charges, equipment and fuel purchase, etc.)		<u>\$5,100,000</u>
Total economic benefit to USVI		\$11,830,400

Source: USVI Charter Yacht League estimates 1982.

Note: Above expenditures do not include estimates to charter owner, local gross receipt or Federal taxes.

We did not include the cost of lodging and food on shore or the purchase of gifts to take home. We did, however, include the costs guests paid charter boat owners for the charters. There are duplications in the numbers of boats since most of the boats in this study are also members of the Charter Yacht League.

Dr. David Olsen and associates found that the average recreational boater spent fifty one dollars each day of boat use in addition to monthly slip rentals of sixty nine dollars and monthly diving fees of thirty dollars. These costs are out of pocket costs and do not include repairs, maintenance, insurance, crew costs and other costs. Table 22 shows their estimates when the sample of 183 boats is expanded to a fleet of 2,000 recreational boats.

Table 22

SUMMARY OF SELECTED COSTS OF A FLEET
OF 2,000 RECREATIONAL BOATS

<u>Expenditure</u>	<u>Daily Expense</u>	<u>Annual Expenditures</u>
Fuel	\$15.62	\$1,548,000
Refreshments	11.38	1,377,000
Fishing Gear	10.76	1,012,000
Travel to boat	6.74	793,000
Ice	4.52	410,000
Bait	<u>1.98</u>	<u>223,000</u>
Total	\$51.00	\$5,363,000

Source: David Olsen and associates, 1979. Socio-Economic Survey of Recreational Boating and Fishing in the U.S. Virgin Islands.

The data is based on a fleet of 2,000 boats that make an average 7 trips per month, have an average of 3.6 guests for a total of 604,800 guests in a year. The data is based on all recreational use and reflects less cost per boat than for the larger boats shown in the sample of charter boats in this study.

PART X -- CONSIDERATIONS FOR THE NEED AND
LOCATION OF FUEL TERMINALS

The geographic area of the three U.S. Virgin Islands is small, comprising approximately 300 square miles. The largest Island, St. Croix, is approximately 21 miles long and 6 miles wide. St. Thomas is 13 miles by 3 miles. St. John is somewhat smaller than St. Thomas. The consumption of fuel by the boating industry is by far the greatest on St. Thomas. The fuel terminals for the boating industry are located at the major marinas.

On St. Thomas the fuel terminals are located on the south side of the island extending from the Western part of Charlotte Amalie, to the West-Central part of the island, to Red Hook on the East end. There are six marine fuel dispensing locations. The maximum distance between any two stations and from the northside to the nearest station is less than 4 miles except for the few boats located on the extreme western end of the island. The service stations serving the motoring public generally track the marine locations except for the area West of the airport, Tu Tu, Nadair and the Northside near Hull Bay.

The marine station on St. John is located at Caneel Bay on the northwest side of the island. Most of the stations serving the motoring public on St. John are located in Cruz Bay on the western end of the island.

On St. Croix, according to the V.I. Department of Conservation and Cultural Affairs, there is only one marine fuel dispensing station. It is located in Christiansted on the south-central part of the island. Non-marine dispensing fuel stations are located throughout the island. There were 294 boats in the sample of which 211 were sailing charters, 12 sport fishing and 71 were full time and part-time fishing boats. All of the boats in the sample, however, use gasoline or diesel fuel. Some use both. The twelve sport fishing boats in the sample used 101,900 gallons of diesel per year and only 6,240 gallons of gasoline. The total usage of 108,210 gallons represented 29 percent of the total annual consumption. Nine of the 12 boats were harbored at one location, the East End. See tables 6, 7 and 8.

The 8 fleet operations, all in the sample, all on St. Thomas, used 111,803 gallons of fuel for the year, 90,711 gallons of diesel and 21,092 gallons of gasoline. Seventy percent of the fuel was dispensed at one location, the East End. There is a more uniform distribution of fuel sales to full-time and part-time fishermen throughout St. Thomas and St. Croix.

Dr. David A. Olsen in his study, Socio-Economic Survey of Recreational Boating and Fishing in the U.S. Virgin Islands, 1979, estimated that seventy percent of fuel sales for marine purposes was purchase at marinas. He further estimated that 1.4 percent of the 168 million gallons of fuel consumed annually in the U.S. Virgin Islands was by the recreational boating industry. Therefore, 2,352,000 gallons of fuel sales was attributable to the recreational boating industry. Data on boat registrations, maintained by the U.S. Virgin Islands Department of Conservation and Cultural Affairs, reveals an increase from 1789 boats as of December 31, 1979 to 2901 (2189 on St. Thomas and St. John and 712 on St. Croix) on December 31, 1983, an increase of about five percent. Assuming that the fuel consumption rate per boat remained the same, consumption would have increased to a yearly total of 2,469,600 gallons by the end of 1983.

The sample of 194 boats in this study are larger, are used more frequently and for commercial purposes of chartering and fishing. This is demonstrated by the amount of fuel used. The 294 boats represent 10.1 percent of the boats registered but consume 15.2 of the fuel in the U.S. Virgin Islands.

In determining the need and possible locations of fuel terminals to serve the boating industry serious consideration must be given to the heavy concentration of the 2189 boats on St. Thomas and St. John and particularly the concentration on the eastern one third of the Island of St. Thomas. Some of

the boats operating out of the East End sail the surrounding waters of St. John. On St. Croix, the concentration of boat dockings is in the Christiansted area. Therefore, it may be feasible to locate two terminals on St. Thomas, one at Charlotte Amalie and the other on the East End and one on St. Croix at Christiansted. If only one terminal should be located on St. Thomas, the data in this study would support a location somewhere in the Lagoon-Compass point area of St. Thomas. The cost of fuel, \$1.60 per gallon for gasoline, and \$1.67 per gallon for diesel are deterrants to a more viable boating industry in the U.S.V.I. The mark-up of fuel from approximately \$1.00 per gallon to the above prices represents a margin far above that stateside. Fuel prices have a drastic effect on the cost of operations of the full-time and part-time fishermen. It is their greatest cost. The pricing of fuel and the margins of profit are factors that need attention. Also, the need for other marine supplies should be considered in combination with fuel.

The above comments are suggestions only -- to be considered when phase two of the study is conducted, a study to determine fuel terminal locations.

FOOTNOTES TO TEXT

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⁵David A. Olsen and Associates, Socio-Economic Survey of Recreational Boating and Fishing in the U.S. Virgin Islands, St. Thomas, USVI, May 1979.

⁶Economic Development Policy Guidelines, Volume 11, Background Narrative, prepared by the Economic Council, January 1979, pp. 57 and 124-125.

⁷Albert Shapero, "The Role of Entrepreneurship in Economic Development at the Less-than National Level," in Robert Friedman and William Schweke, eds., Expanding the Opportunity to Produce: Revitalizing the American Economy Through New Enterprise Development. (Wash., D.C.: The Corporation for New Enterprise Development, 1981).

⁸Olsen and Associates, pg. 38.

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INTERVIEWER

Survey Information
Charterboat and Sport Fishing
U.S. Virgin Islands

1. Name of marina _____
2. Location of marina _____
3. Number of boats docked _____
4. Number of charters per year _____
5. Average number of customers per charter _____
6. Average gross revenue per charter _____
7. Number of boats registered by locations: St. Thomas _____
St. Croix _____, St. John _____, U.S. Mainland _____,
Other Virgin Islands _____, All Other _____.
8. Number of paid crew members per charter _____.
9. Average labor cost per charter _____.
10. Cost of supplies per year: Food and beverage _____,
motors and equipment _____, repairs _____, other _____.
11. Volume of fuel purchased (gallons): Diesel _____, gasoline _____.
12. Estimated pounds of fish caught per charter _____.
13. Estimated pounds of fish sold per charter _____.
14. Type and percent of fish caught:

Percent

[illegible]

15. Where do you buy your fuel:

Diesel _____ Gasoline _____

16. How many hours do you spend per week acquiring your fuel: _____

17. Do you think a centrally located fueling facility is needed: Yes _____ No. _____

18. If such a facility were built, would you use it? Yes _____ No. _____

If no, why _____

19. Do you carry insurance on your boat? Yes _____ No. _____

If yes, what does it cost per year? _____

20. Do you purchase the insurance in the Virgin Islands? Yes _____ No. _____

21. Comments:

APPENDIX II

Date _____

Interviewer _____

Survey Information

Sport Fishing Boats

1. Name of owner _____
2. Location where boat is docked _____
3. Length of boat _____
4. Type of fuel: Diesel _____, Gasoline _____
5. Gallons of fuel used in 1981 _____; Cost per gallon _____.
6. Where do you purchase your fuel _____
7. Distance from where boat is docked _____
8. How much time do you spend per week purchasing fuel _____
9. What other major supplies did you purchase last year?

Type of Supplies

Cost

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

10. Cost of full and liability insurance _____.
11. Do you purchase your insurance in the Virgin Islands? Yes ____ No ____
12. What registration fees or licenses do you purchase _____
_____ Cost _____
13. Estimate of pounds of fish caught each year _____
14. What areas do you fish _____

15. Would you use a centrally located fuel storage facility? Yes ____ No. ____

INTERVIEWER

SURVEY INFORMATION
VIRGIN ISLANDS COMMERCIAL FISHERMAN
ST. THOMAS, VIRGIN ISLANDS

1. Name _____
Address _____
2. Location of boat _____
3. Length of boat _____, type _____, type of engine _____,
horsepower _____, crew size _____.
4. How long have you been fishing _____.
5. Method of fishing: Line _____, bottom _____, trap _____.
6. Percent of fish caught by line _____, bottom _____, trap _____.
7. Number of weeks per year you fish _____.
8. Average number of trips per week _____.
9. Number of hours per trip _____.
10. Average catch per trip _____.
11. Major types of fish you catch:

Type of Fish

Percent of Catch

[illegible]

_____	_____
_____	_____
_____	_____
_____	_____

12. How do you sell your fish: At dock _____, street _____,
fish market _____, local market _____, other _____.
13. How much time per trip does it take to sell your fish _____ hrs.
14. How do you transport your fish to market _____
15. Do you ever set your traps especially for lobster: Yes ____, No. ____.
If no, why not _____

16. Major supplies purchased last year (1981):

<u>Type of Supplies</u>	<u>Unit Cost</u>	<u>Total Cost</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

17. Where do you buy your fuel?
Diesel _____ Gasoline _____
18. Volume of fuel purchased in 1981 (gallons):
Diesel _____ Gasoline _____
19. How much time do you spend per week acquiring your fuel? _____
20. Do you think a centrally located fueling facility is desirable and a good
idea? Yes _____ No _____
21. If such a facility were built, would you use it? Yes _____ No. ____
If no, why ? _____

22. What does your insurance cost per year? _____

23. Comments:

DATE DUE

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